Paper No. 21

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte ARUN NAIDU and STEVEN MORELEN

Appeal No. 2000-1519
Application No. 08/674,875

ON BRIEF

Before THOMAS, KRASS and DIXON, Administrative Patent Judges.

KRASS, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the final rejection of claims 1-10, 12, 13, 15-18 and 20-23.

The invention is directed to controlling the level of signals output from remote antenna units to transmission media in a distributed antenna network. In particular, the gain of a remote antenna unit is reduced when its output signal level is

determined to be greater than the maximum output level which may be received by the transmission media. Therefore, received signals that are stronger than the maximum output level may be transmitted across the transmission media without saturating the system.

Representative independent claim 1 is reproduced as follows:

1. A system for controlling the gain of signals transported over transmission media in a distributed antenna network, comprising:

a plurality of remote antenna units, each of said remote antenna units including;

a signal level comparator for comparing a received signal level of a signal received by the remote antenna unit with a predetermined reference level and generating a single gain control signal, and

a gain controller for adjusting the gain of the remote antenna unit based on the single gain control signal generated by its associated signal level comparator.

The examiner relies on the following reference:

Lemson	5,321,849	Jun. 14, 1994

In addition, the examiner relies on admitted prior art [APA] as set forth at pages 1-3 of the instant specification.

Claims 1-10, 12, 13, 15-18 and 20-23 stand rejected under

35 U.S.C. 103 as unpatentable over APA in view of Lemson.

Reference is made to the briefs and answer for the respective positions of appellants and the examiner.

OPINION

It is the examiner's position that APA discloses the instant claimed invention but for a transmission system comprising a level comparator and a gain controller for reducing the gain of the antenna unit when the received signal exceeds a predetermined threshold. However, the examiner, referring to Figures 2-4 and 8-12, column 10, lines 10-47, column 17, line 39 to column 18, line 31, and column 37, lines 43-62, of Lemson, contends that Lemson teaches remote antenna units wherein each of the remote units comprises a level comparator and a gain controller for reducing the gain of the antenna unit when the received signal exceeds a predetermined threshold.

The examiner then concludes that it would have been obvious to modify APA by providing the teaching of Lemson in "order to efficiently maintain an optimum level over a transmission line of the system" [answer-page 4]. Even so, the examiner indicates that this modification would include the gain control circuit

providing for a plurality of gain control signals (prior and after the transmission line 22) instead of a *single* gain control signal [prior to transmission line 22]. However, the examiner indicates that Lemson also suggests, at column 40, lines 22-29, that the use of a *single* gain control signal only prior to the transmission line was well known. Therefore, it would have been obvious to provide the gain control circuit, in the system of APA as modified by Lemson, with a single gain control signal "in order to offer advantages in terms of low cost and smaller size" [answer-page 5].

For their part, appellants argue that no prima facie case of obviousness has been established in that neither APA nor Lemson provides for a plurality of antenna units wherein *each* antenna unit includes a signal level comparator for generating a single gain control signal and a gain controller for adjusting the antenna gain based on the single gain control signal output from the signal level comparator. Appellants argue that since Lemson discloses a system for controlling signal levels at *both ends* of a transmission link 22, and since the preamplifier 24 receives the "total system input," and controller 42 generates two control signals for setting attenuation levels of first and second signal level changing devices 32, 34, Lemson cannot provide for the

deficiency of APA in providing for a plurality of remote antenna units wherein *each* of the units includes a signal level comparator for generating a *single* gain control signal and a gain controller for adjusting the gain of the remote antenna unit based on the *single* gain control signal generated by its associated signal level comparator.

While APA does teach a distribution antenna network comprising a plurality of remote antenna units, these remote antenna units do not comprise the comparator and gain controller specified in the instant claims. While Lemson shows, in Figure 2, a comparator 42 and a gain controller 32, comparator 42 of Lemson provides two control signals (one to attenuator 32 and one to attenuator 34), rather than a *single* gain control signal, as claimed. The claimed *single* gain control signal precludes the application of the two gain control signals disclosed by Lemson.

Now it is true that Lemson discloses, at column 13, lines 7-12, that one or both of the first and second signal level changing devices *may* comprise a gain controlled amplifier and one or both of the first and second signal level changing devices *may* comprise both a variable attenuator and a gain controlled amplifier. It is further true that column 40, lines 22-29, of Lemson suggests that the use of a single gain control signal only

prior to the transmission link was well known.

However, we find nothing in Lemson, and the examiner has not convincingly pointed to anything in Lemson that would suggest employing a signal level comparator for generating a single gain control signal and a gain controller for adjusting the gain based on the single gain control signal, both in *each* one of a plurality of remote antenna units, as claimed.

While column 40, lines 22-29, of Lemson suggests the use of a single gain control signal prior to the transmission link in the prior art to Lemson, Lemson is comparing that to his invention. There is no indication therein that the prior art, being described by Lemson, also had the signal level comparator *and* a gain controller for adjusting the gain based on the single gain control signal both in *each* one of a plurality of remote antenna units, as claimed.

While Figure 2 of Lemson, with its attendant description, clearly does show a signal level comparator for comparing a received signal level with a predetermined reference level and it does show a gain controller (attenuators 32 and 34), the comparator within the controller 42 generates more than a single gain control signal (one signal each to the attenuators) and there is no indication of an embodiment wherein only a single

gain control signal is generated by controller 42. Accordingly, the claim language, "a single gain control signal" is not met or suggested by Lemson. This language must be read as requiring *only* a single gain control signal, *and no more than a single gain control signal*, because the term, *single* would have no meaning if allowed to read on the disclosure of Lemson which shows *two* gain control signals being generated by controller 42.

Moreover, Figure 2 of Lemson does not clearly teach the depicted elements as comprising a "remote antenna unit." Since Lemson describes the input and output to the depicted elements as being a "total system input" and a "total system output," respectively, [column 16, lines 61-63], it would appear that these elements do not correspond to a single remote antenna unit. The examiner has pointed to nothing which would have led the artisan to include these elements in each one of the remote antenna units depicted in APA. Accordingly, no convincing rationale has been presented by the examiner as to why the artisan would have combined the teachings of the references, within the meaning of 35 U.S.C. 103.

With regard to the Figure 9 embodiment of Lemson, which the examiner contends shows separate antenna units 68a and 68b, each comprising a signal level comparator and a gain controller, there

is no indication that these units comprise separate remote antenna units. With no convincing rebuttal from the examiner, we find ourselves in agreement with appellants that column 37, lines 43-62, of Lemson suggests that the elements identified by the examiner are nothing more than two range enhancing subsystems provided in the same device, such as a base station, and not, as suggested by the examiner, in separate remote antenna units.

Since we find no prima facie case of obviousness established by the examiner, the examiner's decision rejecting claims 1-10, 12, 13, 15-18 and 20-23 under 35 U.S.C. 103 is reversed.

REVERSED

JAMES D. THOMAS Administrative Patent Judge	)
ERROL A. KRASS Administrative Patent Judge	) BOARD OF PATENT) APPEALS AND) INTERFERENCES
JOSEPH L. DIXON Administrative Patent Judge	)

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